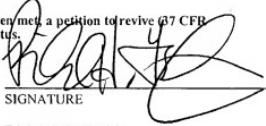


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| FORM PCT/1390 (Modified) (REV 11-98) | | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | | ATTORNEY'S DOCKET NUMBER 66386-272-7 |
| TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371 | | | | U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/936820 |
| INTERNATIONAL APPLICATION NO. PCT/DK00/00121 | INTERNATIONAL FILING DATE 17 March 2000 | PRIORITY DATE CLAIMED 18 March 1999 | | |
| TITLE OF INVENTION A LID FOR CLOSING A CONTAINER | | | | |
| APPLICANT(S) FOR DO/EO/US JOHNSON, Lars | | | | |
| Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: | | | | |
| <ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input checked="" type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). | | | | |
| Items 13 to 20 below concern document(s) or information included: | | | | |
| <ol style="list-style-type: none"> <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input type="checkbox"/> A change of power of attorney and/or address letter. <input type="checkbox"/> Certificate of Mailing by Express Mail <input checked="" type="checkbox"/> Other items of information: Copy of WO 00/56622, dated 28 September 2000 | | | | |

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|---|---|---|---------------------|-------------------------|---------------------------|----|---------|----|
| U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/936820 | INTERNATIONAL APPLICATION NO. PCT/DK00/00121 | ATTORNEY'S DOCKET NUMBER 66386-272-7 | | | | | | |
| 21. The following fees are submitted. | | CALCULATIONS PTO USE ONLY | | | | | | |
| BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : | | | | | | | | |
| <input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO | | \$1,000.00 | | | | | | |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO | | \$860.00 | | | | | | |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International search fee (37 CFR 1.445(a)(2)) paid to USPTO | | \$710.00 | | | | | | |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4)..... | | \$690.00 | | | | | | |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)..... | | \$100.00 | | | | | | |
| ENTER APPROPRIATE BASIC FEE AMOUNT = \$1,000.00 | | | | | | | | |
| Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (c)). | | <input type="checkbox"/> 20 <input type="checkbox"/> 30 \$0.00 | | | | | | |
| CLAIMS | | NUMBER FILED | NUMBER EXTRA | RATE | | | | |
| Total claims | | 18 - 20 = | 0 | x \$18.00 \$0.00 | | | | |
| Independent claims | | 2 - 3 = | 0 | x \$80.00 \$0.00 | | | | |
| Multiple Dependent Claims (check if applicable). | | <input type="checkbox"/> \$0.00 | | | | | | |
| | | TOTAL OF ABOVE CALCULATIONS = \$1,000.00 | | | | | | |
| Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). | | <input checked="" type="checkbox"/> \$500.00 | | | | | | |
| | | SUBTOTAL = \$500.00 | | | | | | |
| Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). | | <input type="checkbox"/> 20 <input type="checkbox"/> 30 + | \$0.00 | | | | | |
| | | TOTAL NATIONAL FEE = \$500.00 | | | | | | |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). | | <input type="checkbox"/> \$0.00 | | | | | | |
| | | TOTAL FEES ENCLOSED = \$500.00 | | | | | | |
| | | <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Amount to be: refunded</td> <td style="width: 50%; text-align: right;">\$</td> </tr> <tr> <td>charged</td> <td style="text-align: right;">\$</td> </tr> </table> | | | Amount to be: refunded | \$ | charged | \$ |
| Amount to be: refunded | \$ | | | | | | | |
| charged | \$ | | | | | | | |
| <p><input type="checkbox"/> A check in the amount of to cover the above fees is enclosed.</p> <p><input checked="" type="checkbox"/> Please charge my Deposit Account No. 04-2223 in the amount of \$500.00 to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p><input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 04-2223 A duplicate copy of this sheet is enclosed.</p> | | | | | | | | |
| <p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</p> | | | | | | | | |
| <p>SEND ALL CORRESPONDENCE TO:</p> <div style="border: 1px solid black; padding: 5px;"> Richard H. Tushin, Esq. Registration No. 27,297 </div> <div style="margin-top: 10px;">  <p>25269 PATENT TRADEMARK OFFICE</p> </div> | | | | | | | | |
|  SIGNATURE | | | | | | | | |
| Richard H. Tushin <hr/> NAME _____ 27,297 <hr/> REGISTRATION NUMBER _____ September 18, 2001 <hr/> DATE _____ | | | | | | | | |

66386-272-7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:) PATENT
Lars JOHNSEN)
Serial No: (PCT/DK00/00121)) Group: Unknown
Filed: Concurrently herewith) Examiner: Unknown
A LID FOR CLOSING A)
CONTAINER)

* * * * *
PRELIMINARY AMENDMENT

Washington, D.C.
September 18, 2001

Honorable Director for Patents
Washington, D.C. 20231

Sir:

Concurrently with the U.S. national phase filing of this application, please amend this application as follows:

IN THE CLAIMS:

Please cancel claims 1-18 without prejudice or disclaimer of the subject matter recited therein.

Please insert new claims 19-36 as follows:

--19. A lid for closing a container, which has a neck with means for securing the lid, wherein an outer lid consists of a top part and a cylindrical collar, which has means on the inner side for securing the lid on the neck of the container, and wherein an inner lid is provided between the outer lid and the upper edge of the container

neck, wherein the inner lid is made of a multi-layered sheet, wherein the upper layer of the inner lid has a first relatively low friction coefficient with the outer lid, while the lower layer of the inner lid has a second relatively higher friction coefficient with the edge of the container collar.

20. A lid according to claim 19, wherein the inner lid comprises a first layer for sealing against the edge of the container, wherein the first layer consists of a soft thermoplastic elastomer or polymer, and wherein the inner lid also consists of a second layer having gas barrier properties.

21. A lid according to claim 19, wherein the inner lid comprises a third layer consisting of thermoplastics, which covers the second layer, said third layer making contact with the outer lid.

22. A lid according to claim 19, wherein the second layer comprises aluminium.

23. A lid according to claim 19, wherein the first layer comprises low density polyolefins.

24. A lid according to claim 19, wherein the first layer comprises low density polyolefins.

25. A lid according to claim 19, wherein the third layer comprises polyolefins.

26. A lid according to claim 19, wherein the third layer comprises polyethylene.

27. A lid according to claim 19, wherein the third layer comprises polypropylene.

28. A lid according to claim 19, wherein the third layer comprises ethylene vinyl acetate plastics.

29. A lid according to claim 19, wherein the third layer comprises polyester.

30. A lid according to claim 19, the diameter of the inner lid is larger than the external diameter of the package neck, but simultaneously smaller than the internal diameter of the outer lid, said protrusion of the collar extending radially toward the centre until the external diameter of the package neck.

31. A lid according to claim 19, wherein the inner lid has a hole for pressure equalization between the volume of the container and a volume between outer lid and inner lid.

32. A lid according to claim 31, wherein a seal sealing against the outer lid is provided around an opening in the inner lid, said outer lid having a subarea above the opening of the inner lid, which is deflected by a pressure difference.

33. A lid according to claim 19, wherein the centre of the inner lid is secured to the outer lid with a rotatable securing means, wherein a container vacuum through the inner lid pulls the centre of the outer lid downwards, thereby deflecting a subarea of the outer lid.

34. A lid according to claim 19, wherein the collar of the outer lid has at least one protrusion, which is directed radially toward the centre, and which extends from the inner side, said protrusion, during removal of the lid, exerting an upwardly directed pressure against the edge of the inner lid at least at one point, which causes the inner lid to be lifted wise out of contact with the upper edge of the package neck.

35. A lid according to claim 19, wherein the collar of the outer lid has an inwardly directed annular ring as a securing means for the inner lid, said ring extending in an oblique direction relative to the inner lid.

36. A method of opening a lid, which is used for closing a container having a neck with means for securing the lid, which consists of a top part and a cylindrical collar having means on the inner side for securing on the neck of a container, said lid internally having an inner lid, wherein during opening of the container by removal of the lid a point wise upwardly directed pressure is exerted on the edge of the inner lid, thereby creating an opening to the volume of the container, which is thereby vented.

REMARKS

By this Preliminary Amendment claims 1-18 have been replaced with new claims 19-36 which better define the invention according to U.S. patent practice.

Respectfully submitted,

DYKEMA GOSSETT PLLC



Richard H. Tushin
Registration No. 27,297
Third Floor West, Franklin Square
1300 I Street, N.W.
Washington, DC 20005-3353
(202) 906-8600

RHT/jjr

ID 42753

WO 00/56622

3/prts

PCT/DK00/00121

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A lid for closing a container

The invention relates to a lid for closing a container which has a neck with means for securing the lid, wherein 5 an outer lid consists of a top part and a cylindrical collar which has means on the inner side for securing the lid on the neck of the container, and wherein an inner lid is provided between the outer lid and the edge of the container neck.

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Lids of this type are known inter alia from EP-B-411385. This document describes a screw lid which ensures tight sealing of a container with a negative pressure. To open the lid, however, a great force is required to rotate the 15 lid sufficiently for achieving pressure equalization in the package container. Only after pressure equalization can the lid be removed. To facilitate opening of screw lids, many kitchens have tools for opening lids.

20 GB 2 122 178 A discloses a plastics lid equipped with a plurality of projections which upon unscrewing engage an inner lid which is thereby lifted out of contact with a container. A large number of projections is provided, or there is one annular projection which causes an inner lid 25 to be lifted free. The external plastics lid itself is open in the centre, so that just the inner lid provides for the actual covering of the internal volume of the container.

30 It is unfortunate that the outer lid is open in the centre, if the container is to have a considerable negative pressure. Hereby, the pressure difference will prevail on the entire surface of the inner lid. Also, the inner lid may easily be broken, if it is subjected to a

- mechanical impact, and there will be direct access from the external atmosphere to the interior of the container. During opening of the lid, the large number of projections will simultaneously try to lift the inner lid on 5 its entire circumference. Hereby, a relatively great force must be applied to lift the inner lid free. Particularly if the lid has a large area, the method will be directly unfortunate.
- 10 The object of the invention is to provide a lid which is easy to open without the use of a great force or by using a tool, and which may be disposed of without any significant environmental impact.
- 15 This may be achieved by a lid like the one described in the opening paragraph, if the collar of the outer lid has at least one projection which points radially toward the centre and which extends from the inner side of the collar, said projection, during removal of the lid, exerting 20 an upwardly directed pressure against the edge of the inner lid at least at one point which causes the inner lid to be lifted out of contact with the upper edge of the package neck.
- 25 Venting of the volume of the container can be achieved hereby by affecting the lid with a relatively weak force. By concentrating the force at a single point and affecting the inner lid in an upward direction, the force required to create venting of the inner volume will be 30 greatly reduced. If the number of projections is increased considerably, the force to be used will be relatively great. By just lifting the inner lid at a single point, it is ensured that the smallest conceivable force

is sufficient to open the lid. Thus, most users will be able to open the package without using a tool.

The diameter of the inner lid may advantageously be larger than the external diameter of the package neck, but simultaneously smaller than the internal diameter of the outer lid, said projection of the collar extending radially toward the centre until the external diameter of the package neck. Hereby, the projection of the outer lid can press the inner lid upwards at one point and thereby vent the volume of the container.

The inner layer may be made of a multi-layered sheet, wherein the upper layer of the inner lid may have a relatively greater friction with the lid than the lower layer of the inner lid which has a relatively lower friction with the edge of the container collar. A combination of several material properties may be achieved hereby. It may also be ensured that the inner lid follows the rotation of the lid so that the rotary movement takes place between package container and inner lid. The lid may be rotated with a low torque because the container is typically made of glass with a smooth surface.

As an alternative, the inner lid may be made of a multi-layered sheet, wherein the upper layer of the inner lid has a relatively lower friction with the lid than the lower layer of the inner lid which has a relatively higher friction with the edge of the container collar. It is ensured hereby that the outer lid rotates relatively to the inner lid until the inner lid is lifted by the projection of the lid. Then, the inner lid can follow the rotation of the outer lid.

The inner lid may consist of a metal layer which is surrounded by plastics. Hereby, the inner lid may achieve rigidity, which may be an advantage when the projection of the outer lid begins to press the inner lid pointwise 5 out of contact with the edge of the package container.

The collar of the lid may be provided with an inwardly facing annular ring, which extends obliquely relatively to the inner lid. It may be ensured hereby during opening 10 that the ring will pointwise press the edge of the inner lid upwards, thereby forming a duct to the container volume.

The inner lid may have a hole for pressure equalization 15 between the volume of the container and a volume between outer lid and inner lid. A vacuum indicator on the outer side of the lid may be activated hereby.

A seal sealing against the outer lid may be provided 20 around an opening in the inner lid, said outer lid having a subarea above the opening of the inner lid which is deflected by a pressure difference. Hereby a vacuum indicator on the outer side of the lid may be activated with indication for maintenance of vacuum in the container, 25 even though a volume between outer lid and inner lid communicates with the surroundings.

The centre of the inner lid may be secured to the outer lid with a rotatable securing means, wherein a container 30 vacuum through the inner lid pulls the centre of the outer lid downwards, thereby deflecting a subarea of the outer lid. Vacuum may hereby be indicated on the outer side of the lid.

Advantageously, the inner lid may be made of a halogen-free material. Disposal of the lid may hereby take place without significant environmental impact.

- 5 The inner lid may be made of a metal which may be de-formed and absorb irregularities on the surface of the package neck. Also, metal will provide a good seal against leakage of air.
- 10 The inner lid may consist of a first layer for sealing against the edge of the container, wherein the first layer consists of a soft thermoplastic elastomer, and wherein the inner lid also consists of a second layer having gas barrier properties. Hereby, the inner lid can absorb irregularities from the container edge, while the inner lid prevents penetration of e.g. oxygen.
- 15

The inner lid may also consist of a third layer consisting of thermoplastics which covers the second layer, said third layer making contact with the outer lid. Hereby, great rigidity for the inner lid may be achieved, and an underlying metal layer may be thin.

- 20
 - 25
- The second layer may advantageously consist of aluminium. Aluminium can form a good gas barrier even with a very thin layer.

The first layer may consist of low density polyolefins. Hereby, a good seal with an uneven container edge can be formed.

The first layer may instead consist of low density polyethylenes. Hereby a good seal with an uneven container edge can be formed.

The third layer may likewise consist of polyolefins, polyethylene, polypropylene or ethylene vinyl acetate. Hereby a good seal with the outer lid can be obtained.

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The third layer may instead consist of polyester. Hereby, the inner lid can resist higher temperatures that may occur during sterilization of a container after the lid has been mounted.

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The invention also relates to a method of opening a lid which is used for closing a container having a neck with means for securing the lid, which consists of a top part and a cylindrical collar having means on the inner side 15 for securing on the neck of a container, said lid internally having an inner lid, wherein opening of the container takes place by removing the lid, thereby exerting a pointwise upwardly directed pressure on the edge of the inner lid, thereby creating an opening to the volume of 20 the container which is vented.

The invention will be explained below with reference to drawings, in which:

25 fig. 1 shows an embodiment, shown in fig. 2, of a lid according to the invention seen in section along the line I-I,

30 fig. 2 shows an embodiment of a lid according to the invention seen from the bottom of the lid,

fig. 3 shows a second embodiment of a lid according to the invention shown in section,

fig. 4 shows a third embodiment, shown in fig. 5, of a lid according to the invention shown in section along the line IV-IV, and

5 fig. 5 shows a third embodiment of a lid according to the invention seen from the bottom.

Fig. 1 shows a lid 1 in relation to a package neck 15, 2, which package neck 15, 2 comprises outer convolutions/threads 12. The lid 1 is shown in section and comprises a cylindrical collar 3 having an annular bead/screw part 4 which is formed on the inner face of the collar and projects radially from it, and which preferably extends from the lower termination face of the 15 collar 3. The opposite end of the collar 3 ends in a top part 6 which is essentially formed as a plane face in integral connection with the collar 3. In the lid, a loose, circular plate called the inner lid 5 is positioned, whose diameter essentially corresponds to the diameter of 20 the collar 3 and is larger than the external diameter of the package neck. A projection 13 in the form of a cylindrical or box-shaped pin extends from the inner face of the collar 3, and this projection 13 has an extent such that it extends into the peripheral part of the inner lid 25 5, i.e. from the edge and a small distance from it, preferably 1-3 mm, where the free end 7 of the projection ends. The projection 13 may be shaped as a cylinder or as a decidedly plane face, the essential point being that it has a small contact area so that when the lid is removed 30 and the venting function is released, the force must be distributed over as small an area as possible, thereby achieving partly a great moment, partly a great pressure at the place concerned. Additional projections 14 may be arranged in the lid, and these additional projections 14

are all positioned at a greater distance from the inner lid 5 than the active projections 13, the purpose of the additional projections 14 exclusively being to ensure that the inner lid does not drop out. The additional projections 14 are essentially shaped like the projections 13.

Fig. 2 shows the positions of the projections (13, 14) seen from the bottom, which are staggered 120°.

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Fig. 3 shows the lid 1 indicated in fig. 1, but where these additional projections 14 are not part of the structure.

15 Fig. 4 shows a third embodiment of the invention, where the position of the projection 13 is the same as stated before, but where the inner lid 5 itself may be formed with a circular hole 10 whose centre coincides with that of the inner lid 5. In order to still ensure a sealingly 20 closed lid 1, a sealing ring 9 is provided between the upper side of the inner lid 5 and the underside of the top part 6, said sealing ring 9 being positioned radially with respect to the hole so as to achieve a tight connection between the inner lid 5 and the top part 6.

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Fig. 5 shows an inner lid 5 arranged in an outer lid, said inner lid having an opening 10.

Fig. 6 shows an alternative embodiment of the invention, 30 where the inner lid 5 is secured to the top part 6 of the outer lid with a rotatable securing means 19 which may be made of flexible plastics. Hereby a vacuum in a container can exert a downward pull in the outer lid, whereby a sump area of the outer lid is bent down.

The inner lid and the outer lid may be made of metal, plastics or cardboard which is coated, where the projections form an integral part of the lid or are subsequently mounted in the lid as pins by riveting or screwing after the inner lid has been arranged.

The inner lid may advantageously have a rigidity which, as soon as the projection begins to move the edge of the inner lid upwards, causes an open channel to be formed which vents the container. The necessary rigidity of the inner lid may be achieved either in that, as mentioned, the inner lid consists of metal, or it may be made of relatively rigid plastics. Various composite materials may advantageously be used. Also, it may be an advantage to combine the lid of several layers of different materials, where one of the layers may be of metal. The use of layers of different materials may result in low friction with the lid, which may thus be rotated without the inner lid being rotated simultaneously, and optionally a good adhesion between the inner lid and the upper edge of the container may be established in order to achieve an optimum sealing.

The invention ensures that sealing against ingress of e.g. oxygen or other gases takes place below the inner lid along the upper edge of the container. Hereby, a relatively long sealing face is involved. It may be expedient e.g. to use polypropylene mixed with e.g. polymer. Also polyethylene may be used. These plastics materials have particularly good barrier properties against water vapour. An alternative material may be bandex which has good barrier properties against oxygen and gas.

Preferred materials may be thermoplastics. Particularly polyolefins will be suitable. As an alternative, polypropylene may be used. If the lid is to be subjected to high temperatures, polyester may advantageously be used.

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As an alternative material, polyethylene (PE) may be used, and here both homopolymer and random copolymer may be used. Further, plastics materials, such as EVA, EMA and EBA, may be used to advantage.

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The lower layer of the inner lid may consist of a soft plastics material which can absorb +/- 0.4 mm irregularities of a container edge.

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The inner lid may be cut from a 3-layered sheet with a rigid lid at the top, e.g. PP/low friction. A gas barrier may be provided in the centre, made of metal, EVOH, Dow BLOx® or Barex®. The lower layer must provide sealing against the container, and the layer must simultaneously absorb glass irregularities. Possible materials may be thermoplastic elastomer, rubber, VLDPE, ULDPE.

20

As a possible alternative, the lower layer may consist of an applied sealing ring, which may be applied as a hot melt.

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Patent Claims

1. A lid for closing a container which has a neck with means for securing the lid, wherein an outer lid consists 5 of a top part and a cylindrical collar, which has means on the inner side for securing the lid on the neck of the container, and wherein an inner lid is provided between the outer lid and the upper edge of the container neck, characterized in that the collar of the outer lid has at 10 least one projection which is directed radially toward the centre and which extends from the inner side, said projection, during removal of the lid, exerting an upwardly directed pressure against the edge of the inner lid at least at one point, which causes the inner lid to 15 be lifted pointwise out of contact with the upper edge of the package neck.
2. A lid according to claim 1, characterized in that the diameter of the inner lid is larger than the external diameter of the package neck, but simultaneously smaller 20 than the internal diameter of the outer lid, said projection of the collar extending radially toward the centre until the external diameter of the package neck.
- 25 3. A lid according to claim 1 or 2, characterized in that the inner lid is made of a multi-layered sheet, wherein the upper layer of the inner lid has a relatively great friction with the lid, while the lower layer of the inner lid has a relatively lower friction with the edge 30 of the container collar.
4. A lid according to one of claims 1-3, characterized in that the inner lid is made of a multi-layered sheet, wherein the upper layer of the inner lid has a relatively

low friction with the outer lid, while the lower layer of the inner lid has a relatively higher friction with the edge of the container collar.

5 5. A lid according to one of claims 1-4, characterized in that the collar of the lid has an inwardly directed annular ring as a securing means for the inner lid, said ring extending in an oblique direction relative to the inner lid.

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6. A lid according to one of claims 1-5, characterized in that the inner lid has a hole for pressure equalization between the volume of the container and a volume between outer lid and inner lid.

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7. A lid according to claim 6, characterized in that a seal sealing against the outer lid is provided around an opening in the inner lid, said outer lid having a subarea above the opening of the inner lid which is deflected by 20 a pressure difference.

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8. A lid according to one of claims 1-7, characterized in that the centre of the inner lid is secured to the outer lid with a rotatable securing means, wherein a container vacuum through the inner lid pulls the centre of the outer lid downwards, thereby deflecting a subarea of the outer lid.

30

9. A lid according to one of claims 1-8, characterized in that the inner lid consists of a first layer for sealing against the edge of the container, wherein the first layer consists of a soft thermoplastic elastomer, and wherein the inner lid also consists of a second layer having gas barrier properties.

10. A lid according to one of claims 1-9, characterized in that the inner lid consists of a third layer consisting of thermoplastics which covers the second layer, said 5 third layer making contact with the outer lid.
11. A lid according to one of claims 1-10, characterized in that the second layer consists of aluminium.
- 10 12. A lid according to one of claims 1-11, characterized in that the first layer consists of low density polyolefins.
- 15 13. A lid according to one of claims 1-12, characterized in that the first layer consists of low density polyethylenes.
14. A lid according to one of claims 1-13, characterized in that the third layer consists of polyolefins.
- 20 15. A lid according to one of claims 1-14, characterized in that the third layer consists of polyethylene.
- 25 16. A lid according to one of claims 1-15, characterized in that the third layer consists of polypropylene.
17. A lid according to one of claims 1-16, characterized in that the third layer consists of ethylene vinyl acetate plastics.
- 30 18. A lid according to one of claims 1-17, characterized in that the third layer consists of polyester.

19. A method of opening a lid which is used for closing a container having a neck with means for securing the lid, which consists of a top part and a cylindrical collar having means on the inner side for securing on the
5 neck of a container, said lid internally having an inner lid, characterized in that during opening of the container by removal of the lid a pointwise upwardly directed pressure is exerted on the edge of the inner lid, thereby creating an opening to the volume of the container which is thereby vented.
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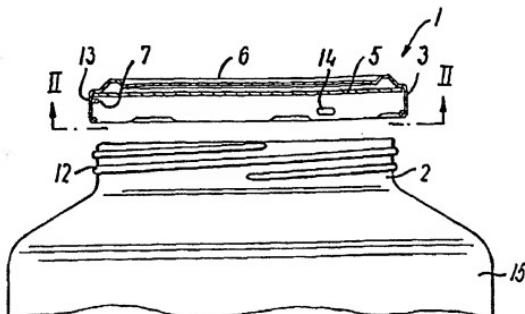
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| (71)(72) Applicant and Inventor: JOHNSEN, Lars [DK/DK]; Storegade 38, DK-6880 Tarm (DK). | | |
| (74) Agent: HOFMAN-BANG A/S; Ryesgade 3, P.O. Box 5020, DK-8100 Aarhus C. (DK). | | |
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(54) Title: A LID FOR CLOSING A CONTAINER



(57) Abstract

The invention relates to a lid (1) and a method of opening the lid which is used for closing a container (15) having means on the inner side of screwing on to the neck (2) of a container. Internally, the lid has an inner lid (5) which is secured in the lid (1) by at least one securing means. The object of the invention is to provide a lid which is easy to open without using a great force or by using a tool, and which may simultaneously be disposed of without significant environmental impact. This is achieved by a lid (1) whose collar (3) has at least one projection (13) which points radially toward the centre and which extends from the inner side of the collar (3), wherein, during unscrewing of the lid (1), the projection (13) presses the edge of the inner lid (5) at least at one point out of contact with the upper edge of the package neck. This ensures venting of the volume of the container with a relatively weak torque. By just affecting the inner lid (5) at a single point in an upward direction, the force required for creating venting will be greatly reduced.

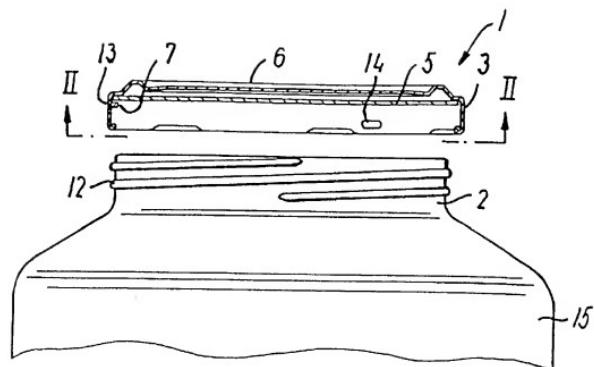


FIG. 1

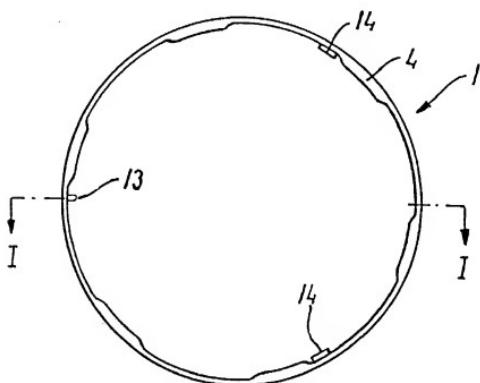


FIG. 2

2 / 3

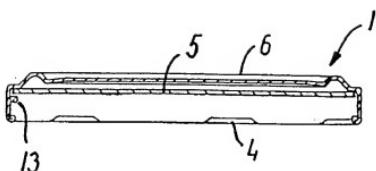


FIG. 3

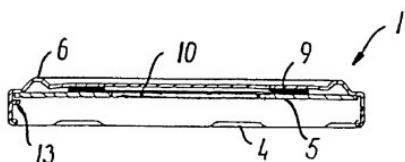


FIG. 4

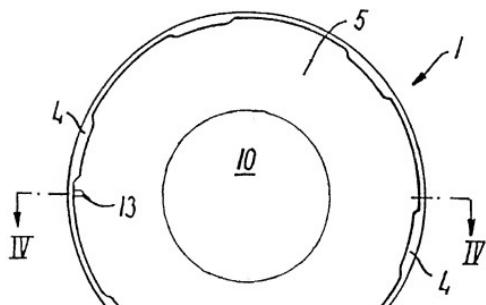


FIG. 5

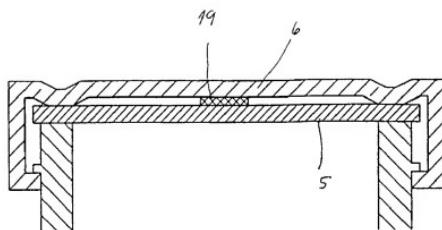


FIG. 6

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FOR UTILITY PATENT APPLICATION (includes PCT)**

Attorney Docket No.
66386-272-7

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name; that
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint
inventor (if plural inventors are listed below) of the subject matter which is claimed and for which a patent is sought on the
invention entitled:

A Lid for Closing a Container

The specification of which (check one): is attached hereto.

was filed on _____ as Application Serial No. _____ and was amended
on _____.

was filed as PCT International application no. PCT/US00/00121 on 17 March 2000 and
was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims,
as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with
Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United States of America before my
or our invention thereof, or patented or described in any printed publication in any country before my or our invention
thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States
of America more than one year prior to this application, that the invention has not been patented or made the subject of
an inventor's certificate issued before the date of this application in any country foreign to the United States of America
or an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or
inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate
having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)

| Application No. | (Number) | Country | Day/Month/Year Filed | Priority Claimed |
|-----------------|----------|---------|----------------------|--|
| PA 1999 00383 | | Denmark | 18 March 1999 | <input checked="" type="checkbox"/> <input type="checkbox"/> Yes No |
| PA 1999 01658 | | Denmark | 19 November 1999 | <input checked="" type="checkbox"/> <input type="checkbox"/> Yes No |

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed
below:

| Application No. | Day/Month/Year Filed | Application No. | Day/Month/Year Filed |
|-----------------|----------------------|-----------------|----------------------|
|-----------------|----------------------|-----------------|----------------------|

I hereby claim the benefit under Title 35, United States Code, §119 of any United States application(s) or PCT international
application(s) designating the United States of America as a party and, insofar as the subject matter of each of the claims
of this application is not disclosed in the prior application(s) in the manner provided by the first
paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined
in Title 37, Code of Federal Regulations, §1.56(u) which occurred between the filing date of the prior application and
the national or PCT international filing date of this application.

Attorney Docket No. 66385-272-7

Application Serial No. Filing Date Status (patented, pending, abandoned)

Application Serial No. Filing Date Status (patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Lawrence R. Radanovic, Reg. No. 23,077; Richard H. Tushin, Reg. No. 27,297; Donald N. Huff, Reg. No. 27,691; John P. DeLuca, Reg. No. 29,505; Sandra S. Snapp, Reg. No. 41,445; Charles Rutherford, Reg. No. 16,933; Robert L. Kelly, Reg. No. 31,843; Ernest E. Helmis, Reg. No. 29,721; and William F. Kukackowski, Reg. No. 41,305, all of Dykema Gossett PLLC. Direct all telephone calls to Telephone no. (202) 906-8660 and fax to (202) 906-8669.

Address all correspondence to Dykema Gossett PLLC, Suite 300 West 1300 Street, N.W., Washington, D.C. 20004-3308.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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|---|----------------------|-----------------------|
| Full Name of First Joint Inventor Ears Johnson | Inventor's Signature | Date 23/0 2001 |
| Residence: Storegade 38, DK-8880 Tarm, Denmark | | Citizenship Danish |
| Post Office Address: Same as Above | | |
| Full Name of Second Joint Inventor | Inventor's Signature | Date |
| Residence: | | Citizenship |
| Post Office Address: | | |
| Full Name of Third Joint Inventor | Inventor's Signature | Date |
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